INLAND FISHERIES COMMISSION
NEWSLETTER
VOLUME 23 NUMBER 1 – MAY 1994

Spawning Area Improvements

Whilst stocking is an option to increase trout numbers in lakes and dams, there is no substitute for natural habitat.

Most of our lakes have ample good spawning habitat and, in fact, over-population can result. However, in a few areas there is limited spawning habitat available and the Commission feels that the best option is to artificially improve the natural conditions. This will have the effect of providing more reliable recruitment and hopefully avoid the need for supplementary stocking with hatchery fish.

Recently the Commission has undertaken spawning stream improvements in two popular fisheries: Lake Sorell and Penstock Lagoon.

Mountain Creek

The Commission recently made further improvement to Mountain Creek at Lake Sorell to provide better conditions for spawning fish. Anglers may recall that improvements were initiated by Rob Sloane in the mid 80's and major modifications were done in 1992. The latter works involved uniform widening and terracing using logs to provide flat sections.

The bottom section of the creek has always contained a sharp bend which was subject to erosion each winter. Minor re-routing of the channel and placement of some new logs has now been done in this area and this should eliminate the problem and cut down on future maintenance costs.

New logs were added in other areas to further cut down the flow rate and make access easier for the fish.

Penstock Lagoon

The canal at Penstock Lagoon has recently been excavated and new gravel added to improve spawning conditions for fish in this water. This section of the canal had silted up and become infested with pin rushes.

Screens will also be placed on the weirs to confine the fish to the lower sections of the canal. In the past, fish moving beyond this area have become stranded as the water level dropped or else they have been quite vulnerable to poaching.

Mountain Creek with log barriers. *(photo Vic Causby)*

Excavator in Penstock Lagoon canal. *(photo Phil Potter)*

IN BRIEF

Trout recruitment monitoring

A number of study sites have been selected to enable annual monitoring of trout recruitment in rivers around the state. Data from this extensive study may confirm the conclusions of the three year St Patricks River study, that indicated a strong relationship between stream flow at certain times of the year and trout recruitment.

Lobster reserves

The Commission has instigated a monitoring program for the new system of lobster reserves in the north of the state. The program is likely to be undertaken on an annual basis for several years and will permit an assessment of the effectiveness of the reserves.

Obviously we will now have to be careful how we interpret information on the Forester River!

Eel blood can be toxic

After having dissected many dozens of eels, IFC biologist Chris Bobbi was concerned to recently read in a text on eels that eel blood is relatively toxic and that as little as 5ml of eel blood contains enough toxin to kill a medium sized dog. Apparently, the blood contains a toxin that causes muscular cramp and inflammation. So if you are into catching your own eels, mind that the blood does not get in your eyes or into open wounds on your hands, otherwise you might be making an unscheduled visit to your local doctor.

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ARTICLES

Platypus Study

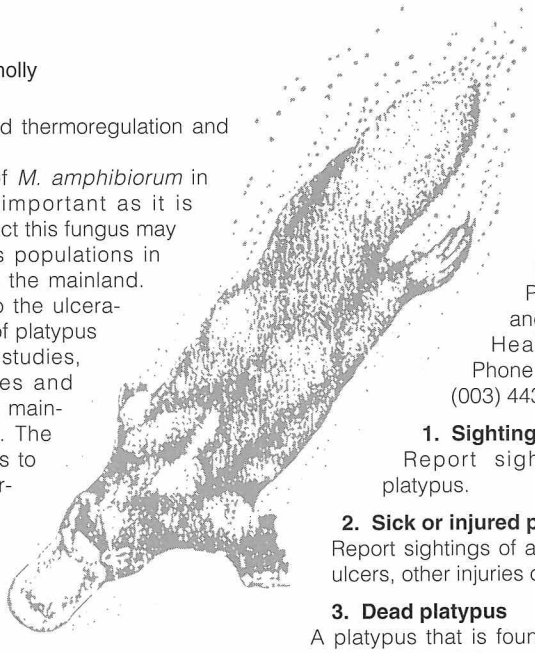
by Joanne Connolly

Ever since Europeans first discovered the platypus in the late 1790's the animal has remained an enigma.

Despite nearly 200 years of interest in the platypus, there are many gaps in our knowledge of this animal, its habitat and its pathology. In Tasmania, little is known of platypus populations, and no studies of the species have so far been carried out in the State.

Many infectious agents and parasites are recorded from platypus, but in the main they do not cause serious illness or mortalities. However, one disease agent, *Mucor amphibiorum*, is known to cause serious disease and deaths in platypus. This fungus has been isolated from platypus from the Elizabeth River at Campbell town, the South Esk River at Perth, the Meander River at Deloraine and Westbury, and Brumbys Creek at Cressy. Affected platypi develop single or multiple skin ulcers in haired and unhaired areas of the body. The fungus invades deeply into the underlying tissues, and leakage of blood and body fluids also occurs. Animals with extensive infections may have impaired thermoregulation and mobility.

Further study of *M. amphibiorum* in the platypus is important as it is unclear what impact this fungus may have on platypus populations in Tasmania and on the mainland. Investigations into the ulcerative skin disease of platypus will include field studies, laboratory studies and collaboration with mainland researchers. The aim of the study is to improve our understanding of *M. amphibiorum*-induced ulcerative dermatitis and other pathology of platypus. The study also aims to improve our understanding of the population dynamics of platypus within the study area.



How you can help:

For any of the following situations please contact Joanne Connolly or David Obendorf, Department of Primary Industry and Fisheries, Animal Health Laboratory – Phone (003) 365235 Fax (003) 443085

1. Sightings

Report sightings of a live platypus.

2. Sick or injured platypus

Report sightings of a platypus with skin ulcers, other injuries or illness.

3. Dead platypus

A platypus that is found dead should be placed in a plastic bag with a note on where and when the animal was found. Place bag in the refrigerator, if possible, to keep it cool and notify us as soon as possible.

Museum of Trout Fishing

Museum Manager

As you would be aware, the Commission recently advertised the position of Museum Manager for the Salmon Ponds. Following interviews Ms Gabrielle Balon from Burnie was appointed. Gabrielle is now on the job and brings a great deal of enthusiasm to the museum project. Her notes are included below by way of introduction.

As a brief introduction to myself, I spent my school days in Burnie before heading north to Armidale, New South Wales where I completed an honours degree in Natural Resource Management. A mixture of work as a Ranger Naturalist in various National Parks here in Tasmania and as a member of a team developing a management plan for the Alpine National Park in Victoria then followed. I spent the past two years travelling and working in North America, Scotland and Europe.

Museum Manager – Gabrielle Balon

You will notice in the above that there is no mention of trout, angling or anything even vaguely fishy. I acknowledge that I come to the position of Museum Manager with much to learn about angling – I am learning, fast! My strength is in interpretation of information. and this will, I hope, be most valuable for the museum project.

My first few weeks with the Inland Fisheries Commission have been spent discovering how the Commission works (that may take quite some time yet!) and developing the panels for the information shelter. The shelter is up and looking good, while the renovation work inside the historic Superintendent's house, which will be used for the museum displays, is now complete and looking even better.

Over the next month or two, efforts will concentrate on the hatchery. Panels explaining the hatchery process, together with a display detailing the challenges and difficulties experienced in bringing the first live salmon and trout ova to Tasmania in 1864 will be put in place. So, if you are in the area why not call in and see the changes that are happening at Salmon Ponds?

Today Show from Salmon Ponds

On 6 May the 9 network's *Today Show* was broadcast live from Salmon Ponds. The crew had been in Tasmania all week as a joint promotional venture by TasTV and Tourism Tasmania.

The Salmon Ponds in general and the museum project in particular received some tremendous publicity as a result.

It was also very interesting to see the work that goes into a production like this. There is a lot more to it than I appreciated.

From the Commission's point of view, Kevin Lange had the ponds looking at their best – we could see them occasionally through the fog!

Today *show hosts Steve Liebmann and Liz Hayes beside the Plenty River at Salmon Ponds.*

Photo courtesy The Mercury

Amphipods: those little shrimpy things

by Alastair Richardson / Department of Zoology, University of Tasmania

Although they are rarely as abundant as insects, crustaceans form an important part of the freshwater fauna of Tasmania. Apart from the large, easily recognised freshwater crayfish, four different types of relatively large crustaceans are found in Tasmania's inland waters. The Mountain Shrimp, *Anaspides tasmaniae*, and its relatives are found in highland lakes and streams, only coexisting with trout where rocks or weeds provide them with a refuge. We have one genuine freshwater shrimp, *Paratya australiensis*. This is basically a lowland species although is also present in lakes on the lower plateau, such as Lake Sorell.

The other two groups have no widely used common names, but are abundant and important members of the freshwater invertebrate fauna. The phreatoicids are slow-moving, bottom-dwelling animals, usually greyish in colour, which curl up when disturbed. A zoologist at the Australian Museum in Sydney has recently invented the name "friartucks" for them. They are abundant in some lakes where trout may feed heavily on them; David Scholes describes the behaviour of trout feeding on phreatoicids in *A Flyfisher in Tasmania*.

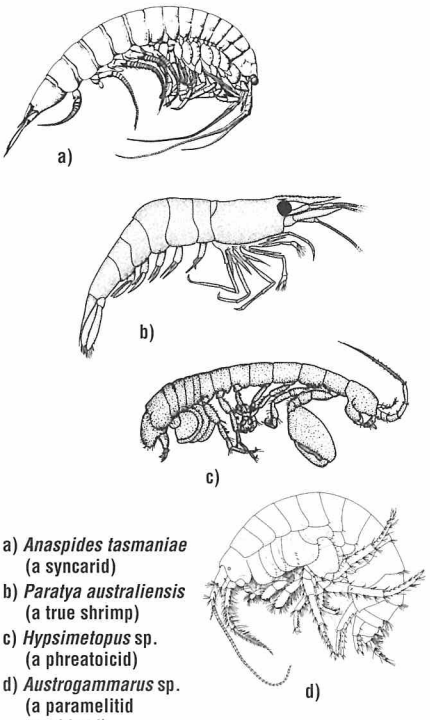
The most widespread group is the amphipods which are the subject of this short article. Again, no common name is used in this country, but we might adopt the American term "scud", since it recalls their active, fast swimming habit (although since the Gulf War the associations are not so helpful!). Amphipods are found in both freshwater and the sea, and some also live on land. The freshwater species range in size from 5-15mm and are usually brown or grey in colour, though some may be quite distinctly green. Most feed on detritus or graze on the surfaces of water weeds, but amphipods are largely non-specialist feeders and they will scavenge the dead bodies of their own or other species.

Breeding

Unlike many other crustaceans, amphipods (and, incidentally the phreatoicids) carry their eggs and young in a ventral brood pouch rather than having a free-living larval stage. Amphipods can often be seen in pairs, a large one carrying a smaller one under its body. This is the male carrying a female, waiting for her to moult, since this is the only time she can be fertilised; the female may be carried for several days. The eggs are laid into the brood pouch and the young hatch after a development time of days or months, depending on the species. The young are miniatures of the adults and go through one or two moults in the brood pouch before they leave their mother. The breeding season is quite long, and may be year-round for some species in lowland waters.

Habitat

Amphipods are found in just about every freshwater body in the State. In streams and rivers they tend to be found in places where they can escape from the current: under stones, in leaf packs or in weed beds. In lakes they can range more widely, and they may swim in open water or walk over the bottom. Perhaps because they are more active than phreatoicids, amphipods are not preyed on by trout quite so much although the most abundant species, the small green *Austrochiltonia australis*, may feature prominently in the diet of trout in some lakes, notably Little Pine Lagoon. Here the trout sometimes take them exclusively (see Rob Sloane's *The Truth About Trout*).



a) ***Anaspides tasmaniae*** **(a syncarid)**
b) ***Paratya australiensis*** **(a true shrimp)**
c) ***Hypsimetopus*** **sp. (a phreatoicid)**
d) ***Austrogammarus*** **sp. (a paramelitid amphipod)**

Amphipod diversity

Five families of amphipods are found in Tasmania, and our freshwater amphipod fauna probably includes more species than anywhere else in Australia, reflecting our extensive freshwaters. However, we do not know exactly how many species there are, since many have not been specifically described, and doubtless some have not even been found yet. The most common species is *Austrochiltonia australis*, a small greenish species usually less than 5mm long; the only Tasmanian representative of the family Ceinidae. It may be found in almost any water body from sea level to the highest mountains and it must have remarkable powers of dispersal as it is amongst the earliest colonisers of farm dams. Just how it gets around is a mystery.

Members of the family Eusiridae are found mostly in the west and north west, but also in coastal situations elsewhere. There are also small amphipods, some quite dark in colour with a horizontal pale band. Two genera are recognised in Tasmania, *Paracalliope* and *Paraleptamphopus*, with perhaps three or four species.

Another strictly coastal family is the Corophiidae. It is represented in Tasmania by a single species, *Paracorophium excavatum*, which is restricted to the lowest reaches of rivers in weakly brackish water.

Two related families, the Paramelitidae and the Neoniphargidae, contain the majority of the Tasmanian amphipods, perhaps 20 or 30 species. These include the largest species, which may be 15mm long or more. Many of the species in this group are endemic to Tasmania, and some have very restricted distributions in the State. One species, *Yulia yuli*, is only found in lakes and tarns on the Ben Lomond massif, while another, *Tasniphargus tyleri*, seems to be confined to the Great Lake or some nearby lakes. Others have colonised caves and groundwaters, losing their pigmentation and eyes in the process. Some of the cave-dwelling species are only found in single cave systems. Overall, the majority of species are found in streams and lakes, especially in the highlands and cooler water areas.

Origins

These families are very ancient. Many Tasmanian animals and plants have relatives only in South America, New Zealand, Madagascar and India, the fragments of the super-continent of Gondwana. So we can deduce that they evolved after Gondwana had separated from Laurasia, the other super-continent, some 50 million years ago. However, the paramelitid and neoniphargid amphipods have relatives in the remains of Laurasia as well, suggesting that they were widely distributed before Gondwana and Laurasia split apart. If so, their origin must have been at least as long ago as the Jurassic, the time of the dinosaurs.

Identification

Identifying amphipods is not easy without a microscope. The common *Austrochiltonia australis* can often be recognised by its green colour, and *Paracalliope* species by their transverse white stripe. Larger species, more than 1cm long, will be members of the Paramelitidae or Neoniphargidae, but identification to species is often impossible since the species have not yet been described. There is not much accessible literature on freshwater amphipods. They get a few pages in Bill William's book *Australian Freshwater Life* (published by Macmillan Australia) and Professor Williams is also the co-author of a much more detailed paper on the taxonomy of the paramelitids and neoniphargids.

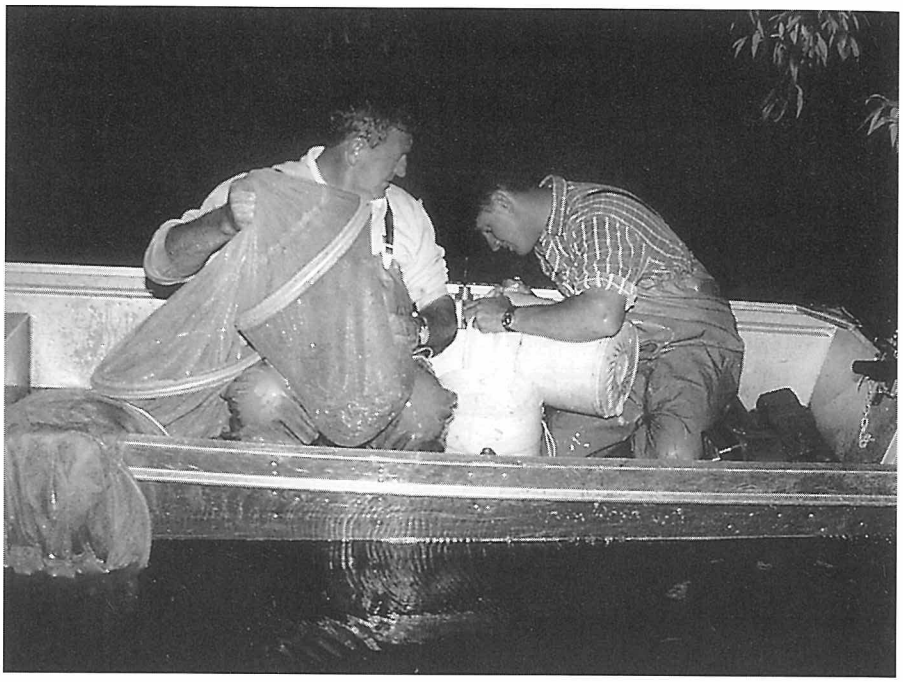
Tasmania's freshwater and terrestrial crustacean fauna is indeed a remarkable one, for its diversity and the presence of ancient species that have disappeared elsewhere. The freshwater amphipods are an important component of that fauna and yet another reasons to care for our lakes and streams.

1993-94 Elver harvest

Over the past eight years the Inland Fisheries has overseen the commercial harvest of young pigmented eels (elvers). The harvest of elvers this year was carried out from 7 November through to the end of January in the Trevallyn Power Station tail race, on the Tamar River. The total catch was about 1 160kg, which is slightly less than the average catch (about 1 500kg). As well as supplying local eel fishermen with elvers for restocking of their waters, some were also made available for sale overseas.

Shortfinned eels *(Anguilla australis)* form the basis of Tasmania's commercial eel fishery, and they have a rather unique life cycle. After spending up to 20 years in rivers and lakes around the State, they leave the relative safety of freshwater, and migrate out to sea to spawn and die. After the eggs hatch, the eel larvae (called leptocephali) drift around in the ocean currents, slowly making their way to the coast of south-eastern Australia where they metamorphose into "glass eels". The glass eels begin to grow and gain pigmentation and are then called elvers. At the beginning of spring each year, elvers appear at the bottom of Tasmania's rivers and acclimatise themselves to freshwater in preparation for the long journey back upstream to live, grow and mature. It is when they congregate below obstacles such as power stations and weirs that elvers are able to be caught. At the Trevallyn Power Station, on the Tamar River, the outflow attracts large numbers of elvers seeking to migrate upstream. They are unable to do so due to the power station. The fish are therefore concentrated and can easily be harvested.

Elvers ready for transfer *(photo Chris Bobbi)*



Emptying the elver nets *(photo Chris Bobbi)*

The method used to catch elvers is quite simple. Japanese type elver nets, which are long funnel shaped and fine meshed, are set on the banks around the power station tailrace during late afternoon low tides. As the tide rises after dark, the elvers actively swim around the tailrace looking for a way upstream and are trapped in the nets which by this time are submerged. The nets are then lifted near the end of peak high tide. The bycatch species sifted are out before the elvers are emptied into holding bags where they are kept until they can be taken to areas where restocking is required.

In past years the Commission has transferred some of the elvers above Trevallyn dam and has provided others free of charge to local eel fishermen for restocking waters within their licence area. A significant amount were also sold to Victorian interests for restocking their waters.

Last season the Commission maintained the above arrangements but also sold a quantity for export. The funds raised from this sale were sufficient to employ staff to assist with commercial fisheries management programs.

Mercury study commences

A short item in the last newsletter mentioned the findings of a preliminary survey of mercury levels in trout from the lower Gordon River and Lake Gordon. Following the results of that survey, the Inland Fisheries Commission is conducting a much more extensive survey of mercury levels in trout and eels from a range of habitats and locations throughout the State. This survey is being jointly funded by the IFC eel research program and the Hydro-Electric Commission.

The study aims are:

- to provide an up to date statewide picture of the public health implications of mercury accumulation in the two most important (in terms of human consumption) species of freshwater fish;
- to use this data as a baseline for future monitoring of mercury concentrations in these species;
- to determine the likely causes of any unusually high concentrations found.

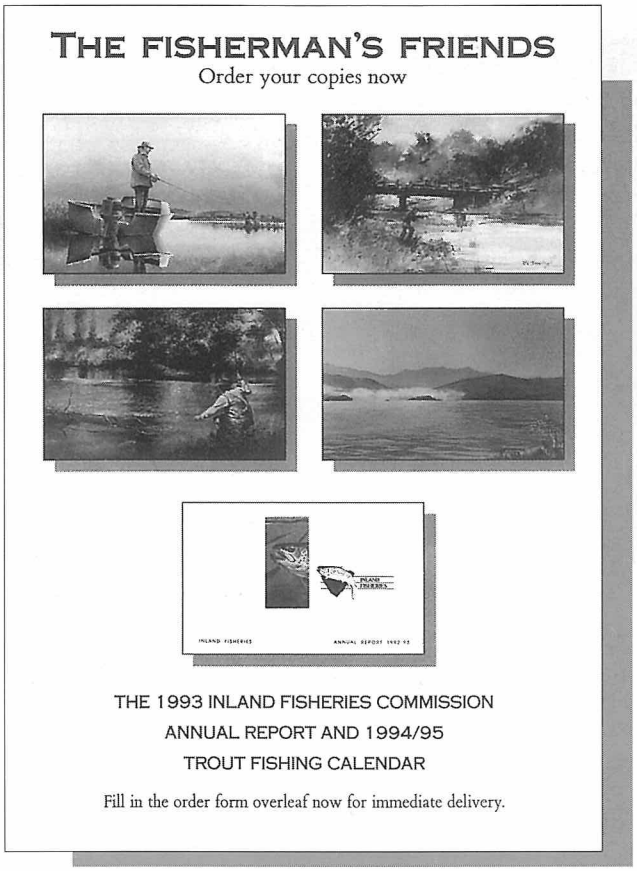
Sites selected for the study include further sites in the Gordon River catchment as well as the Arthur, Pieman, Mersey, Ringarooma, Derwent and Huon rivers, and several lakes in the central highlands, including Lake Sorell, Great Lake and Woods Lake. Where possible, both estuarine and freshwater populations of both species will be sampled from all the rivers.

All fish tissue samples will be analysed by the Department of Environment and Land Management laboratories, and all fish will be measured, weighed and aged by IFC staff. Relationships between mercury concentration and length, weight and age will be computed for each sample. Using this data, the influence of a range of factors on the statewide variation in mean age-adjusted mercury concentration for each species will be examined. These factors include water chemistry, dissolved oxygen conditions, geographic location, geological conditions, hydro-electric development, mining, urban, and industrial developments.

Whilst the survey will be completed by the middle of 1994, preliminary results indicate that eels from Lake Gordon and the Lower Pieman River, as well as trout from the lower Gordon River exceed recommended maximum mercury levels. On the other hand, trout from the lower Pieman River, Lake Gordon, Lake Pedder and Lake Burbury, and trout and eels from the Pieman lakes have acceptably low mercury concentrations. These results indicate that finding the likely causes of any problems may be quite complex. It should be recognised that mercury is a particular problem in long-lived species such as eels because it tends to accumulate over time. Therefore, we fully expect to see elevated concentrations in some eels purely as a result of their longevity.

Similar studies have been done on eel and trout populations on the mainland and overseas. Factors which have been implicated in causing elevated concentrations in these studies include geothermal activity (in New Zealand), industrial pollution, sewage pollution, mining, dam construction and natural causes. While some of these factors are clearly not relevant in Tasmania (e.g geothermal activity), others, such as dam construction and flooding of peaty acidic soils and vegetation, as has happened in the western Tasmanian power developments, are of particular interest.

The IFC and HEC will report further on the implications for anglers and eel fishermen of the results of this study when it is completed. In the meantime, anglers should not be unduly alarmed by the initial reports about trout from the lower Gordon River, as at this stage it appears that trout from most other areas will be cleared for unlimited consumption.



Commission Publications

Anglers would already be aware that this Newsletter can be obtained by direct mailing.

An annual subscription, now $12, will get you an Annual Report and three issues of the Newsletter sent directly to you.

Those persons who are already subscribers will have an Annual Report to come. This report will shortly be printed.

Calendars

Recently many anglers would have received a mail out advertising the Annual Report as well as an angling calendar *(see below)*.

The calendar has four original angling orientated artworks by Tasmanian artists. It is based on the angling season, ie with three months to a page starting with winter 1994. Key dates are included as are some notes on fishing in each of these seasons.

We trust it will be popular and useful to anglers. Orders are now being taken for both Annual Reports and Calendars as below.

Trout Stocking 1993

Following is a list of fish released throughout 1993.

The brown/salmon hybrids are surplus stock from a commercial farming trial. These fish are similar in habits and appearance to brown trout and should respond in much the same way. For instance, past releases of these hybrids at Curries River Dam have been well received by anglers.

BROWN TROUT FRY

WATER STOCKED	LOCATION	NUMBER
Tooms Lake		30 000
Mersey River		70 000
		100 000
Rearing Units		
Latrobe		90 000
North Motton	Ulverstone Branch	51 000
Sassafras	Devonport Branch	10 000
		151 000
Farms Dams		
Badcock	Bishopsbourne	5 000
F Brierley	Grindelwald	500
R Cowmeadow	Forth	1 000
R Dornauf	Dunorlan	10 000
I A Elson	Springfield	500
R E Graham	Buckland	3 000
G Hall	Dunorlan	10 000
A Harker	Cressy	1 500
P McGee	Westbury	5 000
A McShane (2)	Melton Mowbray	450
R L & S F Mitchelson	Westbury	15 000
P Murray	Pegarah	350
D Rushton	Ellendale	100
V G Spencer	Bracknell	5 000
G Thomas	Westbury	10 000
		67 400

BROWN TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
02.10.93	Mersey River	Latrobe Rearing	Adv fry	32 600
03.11.93	Meadowbank Dam	Salmon Ponds	Adv fry	25 000
17.11.93	Lake Leake	Salmon Ponds	Adv fry	10 000
08.12.93	Cluny Dam	Salmon Ponds	Adv fry	7 000
29.05.93	Lake Crescent	Salmon Ponds	1 year	2 500
				77 100

BROWN TROUT ADULT TRANSFERS (GREAT LAKE)

DATE	WATER STOCKED	NUMBER
01.05.93	Lake Kara	200
08.05.93	Carters Lakes	150
08.05.93	Rocky Lagoon	50
08.05.93	Lake Botsford	200
10.05.93	Mersey River	200
11.05.93	Lake Duncan	20
11.05.93	Lake Lynch	20
11.05.93	Bruisers Lagoon	50
11.05.93	Camerons Lagoon	30
		920

RAINBOW TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
06.01.93	Lake Burbury	Sevrup	0+	50 000
26.05.93	Fords Dam	Sevrup	1+	5 000
26.05.93	Brushy Lagoon	Sevrup	1+	5 000
27.05.93	Lake Rowallan	Sevrup	1+	5 000
28.05.93	Lake Rowallan	Sevrup	1+	5 000
02.06.93	Lake Leake	Sevrup	1+	3 000
02.06.93	Tooms Lake	Sevrup	1+	3 000
02.06.93	Brushy Lagoon	Sevrup	1+	6 000
04.06.93	Big Waterhouse Lagoon	Sevrup	1+	11 000
24/25.06.93	Big Waterhouse Lagoon	Sevrup	1+	9 000
20.09.93	North Esk River	Corra Linn	2	80
				102 080

BROOK TROUT (SALMON PONDS)

DATE	WATER STOCKED	AGE	NUMBER
26.11.93	Lake Plimsoll	0+	10 600
14.12.93	Langdon Lagoon	0+	300
14.12.93	Lake Plimsoll	0+	7 400
16.12.93	Clarence Lagoon	0+	4 500
			22 800

TIGER TROUT (SALMON PONDS)

DATE	WATER STOCKED	AGE	NUMBER
17.12.93	Pet Dam	1+	400
			400

BROWN/SALMON HYBRIDS (SALMON PONDS)

DATE	WATER STOCKED	AGE	NUMBER
29.09.93	L Goss - Bishopsbourne	fry	10 000
29.09.93	A Brooks - Bishopsbourne	fry	5 000
29.09.93	P Spencer - Bracknell	fry	5 000
29.09.93	H Skerritt, Epping Forest	fry	10 000
22.11.93	Curries River Dam	0+	10 000
22.11.93	Blackmans Lagoon	0+	2 000
22.11.93	Reservoir Dam	0+	1 000
22.11.93	Bruins Dam	0+	100
22.11.93	Brandy Dam	0+	150
22.11.93	Wonder Dam	0+	50
22.11.93	Farm Dam	0+	200
01.12.93	Flora Park - Kingston	fry	1 000
01.12.93	Big Lagoon - Bruny Island	fry	3 000
17.12.93	Guide Dam	0+	2 000
			49 500

Condition factor, K, for salmonid fish

The following article is adapted from Victorian Fisheries Notes No 5. The Commission is most grateful to that tireless worker for recreational fishers, Charles Barnham of the Department of Conservation and Natural Resources, Victoria for kindly allowing us to reproduce the article and pictures.

Anglers frequently refer to the fish they have caught as being in poor, good or excellent condition.
This qualitative measure is usually based on a visual assessment of the fish, taking into account its general shape including its length and weight, and its appearance. The latter usually equates to how "fat" the fish is compared to memories of previous catches – "this fish is in good condition and it is better/worse than the one I caught yesterday".
Can we put certainty into these guesses?

Trout and salmon have always been subjected to this judgement by anglers. In addition, improving the condition of fish and their populations is an integral part of management objectives for fisheries where populations are totally or largely managed by stocking with hatchery produced fish.

In 1902, Fulton (no relation as far as I know – Ed) proposed the use of a mathematical formula based on the length and weight to arrive at a Condition Factor **(K)** that could be used to quantify and hence compare the condition of fish.

The formula used is: $\mathbf{K} = \frac{W}{L^3}$

Where:
W is the weight of the fish in grams (g)
L is the length of the fish in millimetres (mm)

In the case of salmonids, length is measured from the tip of the snout to the rear edge of the fork at the centre of the tail fin; known as length to caudal fork (LCF). The cube of the length is used because growth in weight of salmonids is proportional to growth in volume.

The figure calculated is then multiplied by 105 or 100 000 to bring it near to 1 for comparative purposes. For salmonids, **K** values usually fall in the range of 0.8 to 2.0.

The value of **K** for any fish is influenced by such things as its age, sex, stage of maturation, fullness of gut, type of food consumed, amount of fat reserve and degree of muscular development.

In some fish species, the gonads may weigh up to 15% or more of total body weight. With females, the **K** value will consequently decrease rapidly when the eggs are shed.

The **K** value can be used to assist in determining the stocking rate of trout in a particular water. If the **K** values reach an unacceptably low level in a water which is totally or partly dependent on stocking, the stocking rate can be reduced accordingly until the **K** values improve and reach an acceptable level.

On the basis of comparison of the **K** value with general appearance, fat content, etc, the following standards could be used to describe, with some authority, the relative condition of fish.

K value

1.60 **Excellent** condition, trophy class fish.
1.40 A **good**, well proportioned fish.
1.20 A **fair** fish, acceptable to many anglers.
1.00 A **poor** fish, long and thin.

WEIGHT (g) \ LENGTH (mm)	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
100	1.25	0.88															
125	1.56	1.10	0.80														
150	1.88	1.32	0.96														
175	2.19	1.54	1.12	0.84													
200		1.76	1.28	0.96													
225		1.98	1.44	1.08	0.83												
250		2.19	1.60	1.20	0.93												
275			1.76	1.32	1.02	0.80											
300			1.92	1.44	1.11	0.87											
325			2.08	1.56	1.20	0.95											
350				1.68	1.30	1.02	0.82										
375				1.80	1.39	1.09	0.87										
400				1.92	1.48	1.17	0.93										
425				2.04	1.57	1.24	0.99	0.80									
450				2.16	1.67	1.31	1.05	0.85									
475					1.76	1.38	1.11	0.90									
500					1.85	1.46	1.17	0.95	0.78								
600					2.22	1.75	1.40	1.14	0.94	0.78							
700						2.04	1.63	1.33	1.09	0.91							
800							1.87	1.52	1.25	1.04	0.88						
900							2.10	1.71	1.41	1.17	0.99	0.84					
1000								1.90	1.56	1.30	1.10	0.93	0.80				
1100								2.10	1.72	1.43	1.21	1.03	0.88				
1200									1.88	1.56	1.32	1.12	0.96	0.83			
1300									2.03	1.69	1.43	1.21	1.04	0.89			
1400										1.82	1.54	1.31	1.12	0.97	0.84		
1500										1.95	1.65	1.40	1.20	1.04	0.90		
1600										2.08	1.76	1.49	1.28	1.11	0.96	0.84	
1700											1.87	1.59	1.36	1.17	1.02	0.89	
1800											1.98	1.68	1.44	1.24	1.08	0.95	0.83
1900											2.09	1.77	1.52	1.31	1.14	0.99	0.88
2000												1.87	1.60	1.38	1.20	1.05	0.93
2100												1.96	1.68	1.45	1.26	1.10	0.97
2200												2.05	1.76	1.52	1.32	1.16	1.02
2300													1.84	1.59	1.38	1.21	1.06
2400													1.92	1.66	1.44	1.26	1.11
2500													2.00	1.73	1.50	1.32	1.16
2600													2.08	1.80	1.56	1.37	1.20
2700														1.87	1.62	1.42	1.25
2800														1.93	1.68	1.47	1.30
2900														2.00	1.74	1.53	1.34
3000														2.07	1.80	1.58	1.39
3100															1.86	1.63	1.44
3200															1.92	1.68	1.48
3300															1.98	1.74	1.53
3400															2.04	1.79	1.57
3500																1.84	1.62
3600																1.89	1.67
3700																1.95	1.71
3800																2.00	1.76
3900																2.05	1.81
4000																	1.85
4100																	1.90
4200																	1.94
4300																	1.99
4400																	2.04
4500																	2.08

0.80 **Extremely poor** fish, resembling a barra-couta; big head and narrow thin body.

How to calculate K

As an example, take two trout, both 500mm long, one fish weighing 1 000g, the other 2 000g.

- Trout 1 (1 000g):

$$\mathbf{K} = \frac{10^5 \times 1\,000}{(500)^3} = 0.8$$

The condition factor of this fish is 0.8, a very poor specimen.

- Trout 2 (2 000g):

$$\mathbf{K} = \frac{10^5 \times 2\,000}{(500)^3} = 1.6$$

The condition factor of this fish is 1.6, an excellent specimen.

The angler may calculate **K** values accurately themselves or an estimate may be obtained by using the chart below. Remember, the chart doesn't contain all variations of length and weight but a reasonable estimate can be obtained.

An illustration of the range of **K** values is also given with the photographs.

Summary

The Condition Factor **K** allows for the quantitative comparison of the condition of individual fish within a population, individual fish from different populations, and two or more populations from different localities.

K (taken collectively) may also be used as an index of the productivity of a water.

Bear in mind that the **K** value is greatly influenced by the stage of development of the reproductive organs. Therefore, when comparing **K** values, it is important to sample the individuals or populations at the same time of the year so that fish are at the same stage of the reproductive cycle.

Again, thanks to Victorian Fisheries for the basis of this interesting article.

Trout surveys

Stuart Chilcott, Scientific Officer,
Inland Fisheries Commission

Lake Mikany

Anglers have recently suggested that the low catch rates in Lake Mikany are due to low numbers of trout in the lake. The Commission recently conducted a netting survey of the fishery to assess any changes which may have occurred since the last survey in 1986.

The brown trout population at Lake Mikany has been surveyed on two occasions in recent years. The first netting survey occurred on the 3 April 1986 and the second on the 9 February 1994.

Similar net locations and nets were used for both surveys to permit comparisons of catch rates and population characteristics between surveys. Net capture data have been reduced to catch per metre for each net type. The capture data for both surveys are summarised below.

SUMMARY OF BROWN TROUT CAPTURE DATA FROM LAKE MIKANY

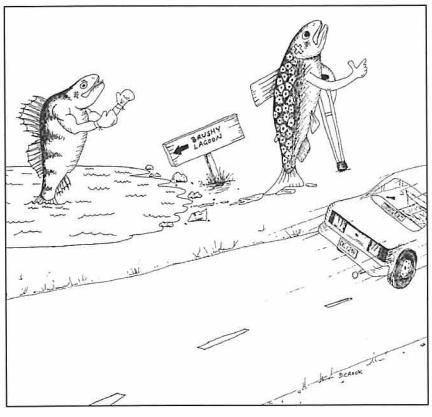
Population characteristics	1986	1994
Number of fish caught	54	62
Average length (mm)	312	304
Range of length (mm)	249-435	212-470
Average weight (g)	416	375
Range of weight (g)	184-1034	118-1250
Trout per mullet net metre	0.327	0.337
Trout per graball net metre	0.050	0.050

The catch effort index for mullet nets (50mm mesh size) was similar between years with 0.327 trout per metre in 1986 and 0.337 trout per metre in 1994. The catch effort index for graball nets (100mm mesh size) was identical for both years. This indicates that the relative abundance of trout has not changed significantly between years.

As shown in the two graphs the length distributions of the samples of brown trout are very similar between years. Evidence from the length frequency distributions and the data in the summary capture statistics suggest that little change in the population has occurred since 1986. However, analyses of trout growth and age structure are still required before the investigation is completed and final conclusions provided. Further details will be given in a later volume of the newsletter.

Brushy Lagoon

Anglers are aware that Redfin perch have recently become well established in Brushy Lagoon possibly to the detriment of the trout fishery. Results of a recent netting survey are now available and these data permit comparisons of the population structure of the brown and rainbow trout populations before and after the redfin perch introduction.



BROWN TROUT

Population characteristics	1989	1991	1994
Av. length (mm)	283	445	446
Range/length (mm)	231-575	287-570	283-563
Av. weight (g)	442	1 200	1 149
Range/weight (g)	179-2900	270-2375	250-2276
No. of fish caught	30	67	16
Trout per mullet net m	0.17*	0.17	0.1
Trout per graball net m	0.19*	0.28	0.007

* estimated average for two nights netting

RAINBOW TROUT

Population characteristics	1991	1994
Average length (mm)	393	374
Range of length (mm)	225-492	358-388
Average weight (g)	1 021	740
Range of weight (g)	150-1690	630-827
Number of fish caught	122	7
Trout per mullet net metre	0.26	0.05
Trout per graball net metre	0.55	0

A total of 59 redfin perch were also captured in the 1994 survey with lengths ranging between 190-391mm and weights ranging between 76-1 250g. Redfin perch were not detected in the 1989 or 1991 surveys.

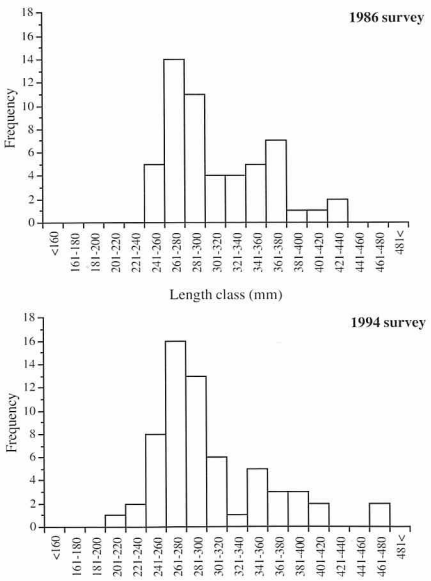
The relative numbers of brown trout and rainbow trout have decreased since the 1991 survey. This is particularly apparent for rainbow trout with the total numbers captured dropping from 122 in 1991 to seven in 1994. The catch per unit length of net confirms the drop in numbers, particularly for rainbows.

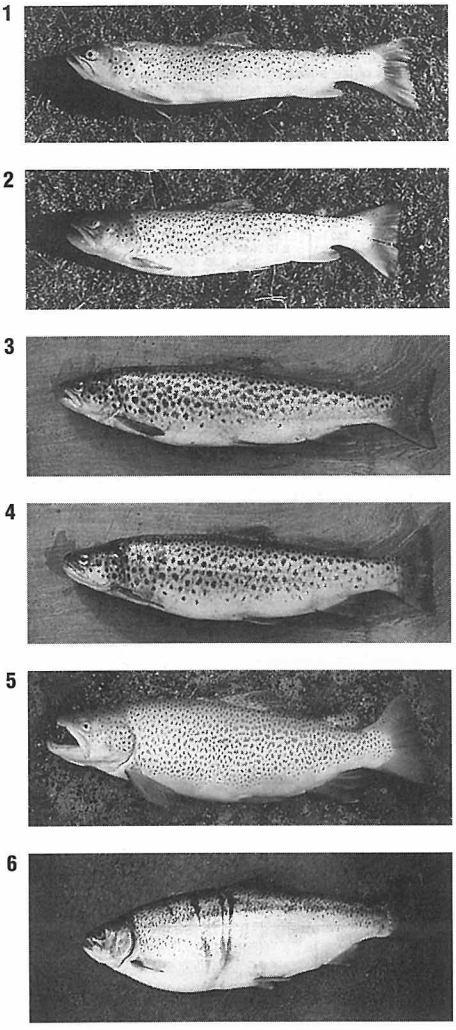
The results show that the browns caught in 1994 were of similar size and weight to those in 1991, but less of them. However, the absence of rainbows indicates almost total failure of the 1992 and 1993 stockings which consisted of a total of 30 000 good quality fingerlings!

The Commission wants to analyse the catch information further but anglers are already aware of the decline and the fact that redfin may well be the reason.

Do we attempt to reverse this position? It would require procedures not used in Tasmania before.

Length frequencies of brown trout taken from netting surveys at Lake Mikany in 1986 and 1994.





1 EXTREMELY POOR

Species:	Brown trout	**Length:**	505mm
Sex:	Female	**Weight:**	1 000g
Gonad stage:	Ripe	**K:**	0.78

This fish is long and thin, with very little edible flesh.

2 POOR

Species:	Brown trout	**Length:**	435mm
Sex:	Female	**Weight:**	780g
Gonad stage:	Ripe	**K:**	0.95

This fish is also long and thin.

3 FAIR

Species:	Brown trout	**Length:**	400mm
Sex:	Female	**Weight:**	760g
Gonad stage:	Mature	**K:**	1.19

4 GOOD

Species:	Brown trout	**Length:**	400mm
Sex:	Female	**Weight:**	870g
Gonad stage	Mature	**K:**	1.36

5 EXCELLENT

Species:	Brown trout	**Length:**	545mm
Sex:	Male	**Weight:**	2 680g
Gonad stage:	Ripe	**K:**	1.66

6 EXCEPTIONAL

Species:	Rainbow trout	**Length:**	510mm
Sex:	Female	**Weight:**	2 680g
Gonad stage:	Immature	**K:**	2.02

Estuary Perch

During a recent trip to the Arthur River on the north west coast to collect eels, Inland Fisheries Commission staff, assisted by professional eel fisherman Les Sims, were surprised to find a fish species which is rare in Tasmanian waters.

The species was the estuary perch *(Macquaria colonorum)* which, as its name implies, lives in estuarine waters although it can survive in freshwater. It is closely related to the Australian bass and both species are highly regarded sportfish in New South Wales, Victoria and South Australia, where they are more common. This species is not common in Tasmania although it was formerly known from the Ansons Bay area. The Commission did find a specimen of the estuary perch in the Arthur River about seven years ago and locals are probably well aware of this fish but perhaps were not aware of its significance. Because of its spiny nature it is very susceptible to gill-netting which may well have led to their disappearance from the Ansons Bay area.

Estuary perch* (Macquaria colonorum) *from Arthur River.

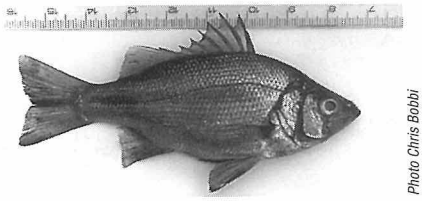


Photo Chris Bobbi

Open Day

The Commission again held its Annual Open Day at Liawenee on Sunday 8 May. Weather conditions were generally good with a cool wind at times.

The run of trout was only fair for Great Lake but visitors got a good look at the stripping process. The Commission collected approximately 500 000 eggs which were transferred to Plenty for incubation.

Displays in the laboratory gave information on the Commission's research and management activities with several interactive opportunities. The aquarium section was again popular and probably the best such display of native fish yet put on by staff.

The Longford club catered for visitors with an endless supply of coffee and barbecued mysteries.

Visitor numbers were probably down on past years but with Agfest and Mothers Day to compete with, this is understandable.

PROSECUTIONS

Infringement notices

During the six months from 1 July 1993 to 31 December 1993 the following 'on the spot fines' were issued.

Offence	Number
Fish without a licence	8
Fish with more than one rod and line	11
Use strike indicator	9
Fish with unattended set rod	2
Take whitebait	5
Possess or use a net	7

Court proceedings

Offences that were proceeded with by summons are listed below.

Offender	Location	Offences Summary	Total fine + costs ($)
Rodney Neil GREY, Smithton	DUCK RIVER	Take whitebait/Possess whitebait/Possess net	1 532
Dale Lester LAMBERT, Smithton	DEEP CREEK	Take whitebait/Possess whitebait/Possess net/Obstruct an officer	2 032
Michael Joseph TAYLOR, Windermere	WINDERMERE BAY, DERWENT RIVER	Take trout other than rod & line/Use graball net	282 spec pen: 56
Lawrence William PETERS, Bradys Lake	MACQUARIE HARBOUR	Take whitebait/Possess whitebait	532
Wayne Lester GREY, Smithton	DUCK RIVER	Take whitebait/Possess whitebait/Possess & use net	932
Michael Darren GRICE, Smithton	DUCK RIVER	Take whitebait/Possess whitebait/Possess & use net	1 532
Roger James LAMBERT, Smithton	DUCK RIVER	Take whitebait/Possess whitebait/Possess & use net	2 132
Grant Anthony BRAUER, Devonport	BRADYS LAKE	Unattended set rod/Unlicensed/Falsely represent to be licensed/False name and address	632
Craig Edward BARKER, Wynyard	CAM RIVER	Take whitebait/Possess whitebait	432
David McGeorge Boyd BANNER, Latrobe	MERSEY RIVER	Take whitebait/Possess whitebait	1 032
Wayne Lester GREY, Smithton	DUCK RIVER	Possess & use net	232
Rodney Neil GREY, Smithton	DUCK RIVER	Take whitebait/Possess whitebait/Possess & use net	962
Dale Lester LAMBERT, Smithton	DUCK RIVER	Take whitebait/Possess whitebait/Possess & use net	1 862
Jacqueline Mary HANSON, Smithton	DUCK RIVER	More than 1kg whitebait per day	132
Mark Anthony FRAME, Bridgewater	TYENNA RIVER	Unlicensed	132
Jamie Alan FENTON, Gagebrook	BRADYS LAKE	Unattended set rod	132
Roger James LAMBERT, Smithton	DUCK RIVER	Take whitebait/Possess & use net/Improper language	1 532
Steven Gregory TATNELL, Risdon Vale	WOODS LAKE	More than 1 rod/Unattended set rod	264
Percy Clyde TATNELL, Risdon Vale	WOODS LAKE	More than 1 rod/Unattended set rod	264
Leslie Trevor SIMS, Latrobe	LAKE MIKANY	Use oversized fyke net/Use fyke nets with no identification/ Take eels other than by rod & line/Obstruct an officer	782 spec. pen: 50
Andrea Astrid DANDY, Victoria	FALLS & TYENNA RIVERS	Unlicensed	232
Craig Henry JACKSON, Smithton	DUCK RIVER	Possess net/Possess whitebait	432
Peter Warren LAMBERT, Smithton	DEEP CREEK	Take whitebait/Possess net/Possess whitebait	2 132
Peter Leslie COVENTRY, Ulverstone	MERSEY RIVER	Possess & use net	332
Mathew Ronald BEAN, Latrobe	SASSAFRAS	Unlicensed	322
Neil Reginald HICKEY, Lindisfarne	RISDON COVE	Use graball net in prohibited area of Derwent River	62
David Stephen SALTER, Montagu Bay	RISDON COVE	Use graball net in prohibited area of Derwent River	62
Graeme Maxwell FAULKNER, George Town	CURRIES RIVER DAM	Unlicensed/Assembled rod	332
Troy Leonard ROUSE, Spreyton	MERSEY RIVER	Take whitebait/Use net	432
Jamie Lee SMITH, Devonport	MERSEY RIVER	Take whitebait/Possess net	1 032
Garry Charles LATHAM, Devonport	MERSEY RIVER	Take whitebait/Possess net	432
Patrick Edward GARLAND, Wynyard	INGLIS RIVER	Take whitebait/Possess net	1 332
Kevin Richard HENNESSEY, Smithton	SMITHTON	Assault officer/Resist arrest	312
Arthur George QUAILE, Longford	HYDRO CREEK, ARTHURS LAKE	Use firearm to take fish	282
Colin Douglas SCOTT, Smithton	DUCK RIVER	Take whitebait/Possess whitebait/Use net	632
Mark Andrew WILSON, Launceston	NORTH ESK RIVER	Unlicensed	262
David George MCDERMOTT, Latrobe	MERSEY RIVER	Take whitebait/Possess net	1 000